Arjuna JEE 2023

Basic Maths

DPP-02

1. Solution of inequality $2x-3>0$ and $4-3x<0$.

(1) $x>\frac{4}{3}$ (2) $x<\frac{4}{3}$

(3) $x>\frac{3}{2}$ (4) $x<\frac{3}{2}$

2. Solution of inequality $-5<x+3\le 9$

(1) $x \in [-8, 6)$ (2) $x \in (-8, 6]$

(3) $x \in (-2, 6]$ (4) $x \in (-8, 6)$

3. Values of 'x' satisfying : $\frac{x^2+x-2}{x^2-x-12}\ge 0$

(1) $x\in(-\infty,-3]\cup[-2,1]\cup[4,\infty)$

(2) $x\in(-\infty,-3)\cup[-2,1]\cup(4,\infty)$

(3) $x\in(-3,4)$

(4) $x\in(-3,-2]\cup(4,\infty)$

4. Values of 'x' satisfying both inequalities:

$x-3\le 4$ & $\frac{x-5}{x+1}>0$

(1) $x \in (-\infty, 7]$

(2) $x \in (-\infty, -1)$

(3) $x \in (-\infty, -1) \cup (5, 7]$

(4) $x \in (5, 7]$

5. Largest integral value of x satisfying:

$$\frac{x^2-9}{(x-1)(x-6)}\le 0$$

(1) 5 (2) 3

(3) 4 (4) 6

6. Solution of $\frac{2x-x^2}{(3+x)(5-x)}<0$ contains smallest negative integral value is:

(1) –3 (2) –2

(3) –1 (4) 0

7. Values of 'x' satisfying: $-1<\frac{2x}{x-1}\le 4$

(1) $x\in\left(-\infty,\frac{1}{3}\right)\cup(1,\infty)$

(2) $x\in\left(-\infty,\frac{1}{3}\right)\cup(2,\infty)$

(3) $x\in\left(-\infty,\frac{1}{3}\right)\cup[2,\infty)$

(4) $x\in\left(-\infty,\frac{1}{3}\right)\cup[2,\infty)\cup\{1\}$

8. Solution of $\frac{2x-3}{3x-5}\ge 3$ is:

(1) $x\in\left[\frac{5}{3},\frac{12}{7}\right]$ (2) $x\in\left(\frac{5}{3},\frac{12}{7}\right)$

(3) $x\in\left[\frac{5}{3},\frac{12}{7}\right)$ (4) $x\in\left(\frac{5}{3},\frac{12}{7}\right]$

9. Solution of $\frac{x^2-x-6}{x^2+6x}\ge 0$ is

(1) $x \in (-\infty, -6) \cup [2, 0) \cup [3, \infty)$

(2) $x \in (-\infty, -6) \cup [-2, 0) \cup [3, \infty)$

(3) $x \in (-\infty, -5) \cup [-2, 0) \cup [3, \infty)$

(4) $x \in (-\infty, -6) \cup [-2, 0) \cup [2, \infty)$

10. Solution of $(x-1)^2(x+1)^3(x-4)\ge 0$ is

(1) $x \in (-\infty, -1] \cup \{2\} \cup [4, \infty)$

(2) $x \in (-\infty, 1] \cup \{3\} \cup [4, \infty)$

(3) $x \in (-\infty, -1] \cup \{1\} \cup [4, \infty)$

(4) $x \in (-\infty, -1] \cup \{1\} \cup [3, \infty)$

11. Solution of $\frac{(x+2)(x^2-2x+1)}{-4+3x-x^2}\ge 0$

(1) $x \in (-\infty,-2] \cup \{1\}$

(2) $x \in (-\infty, -2]$

(3) $x \in (-\infty, -3] \cup \{1\}$

(4) $x \in (-\infty, -1] \cup \{2\}$

12. The complete solution set of the inequality

$$\frac{x^4-3x^3+2x^2}{x^2-x-30}\geq 0$$

(1) $(-\infty,-5)\cup(1,2)\cup(6,\infty)\cup\{0\}$

(2) $(-\infty,-5)\cup[1,2]\cup(6,\infty)\cup\{0\}$

(3) $(-\infty,-5)\cup[1,2]\cup[6,\infty)\cup\{0\}$

(4) None of these

13. Solution of inequality: $2x^2-2x-1<0$

(1) $x\in\left(\frac{1-\sqrt{3}}{2},\frac{1+\sqrt{3}}{2}\right)$

(2) $x\in\left[\frac{1-\sqrt{3}}{2},\frac{1+\sqrt{3}}{2}\right]$

(3) $x\in\left(-\infty,\frac{1-\sqrt{3}}{2}\right)\cup\left(\frac{1+\sqrt{3}}{2},\infty\right)$

(4) $x\in(-1,2)$

14. Solution of $(x^2+1)>0$ is

(1) $x\in(-\infty,-1)\cup(1,\infty)$

(2) $x\in(-1,1)$

(3) $x\in R$

(4) No solution

15. The number of integral solution of $\frac{x+1}{x^2+2}>\frac{1}{4}$ is

Answer Key

1. **(3)**
2. **(2)**
3. **(2)**
4. **(3)**
5. **(1)**
6. **(2)**
7. **(3)**
8. **(3)**
9. **(2)**
10. **(3)**
11. **(1)**
12. **(2)**
13. **(1)**
14. **(3)**
15. **(5)**

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